



PATENT
04413-P0005A WWW/DWA

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	Hans David Hoeg, <i>et al.</i>
Application No. 10/657,110	Filing Date: September 9, 2003
Title of Application:	Method For Using VDOV Endoscopy In Conjunction With IGS
Confirmation No. 9223	Art Unit: 3739
Examiner	Philip R. Smith

Mail Stop Appeal Brief - Patents
Commissioner for Patents
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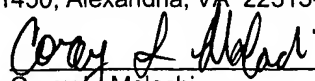
Appeal Brief Under 37 CFR §41.37

Dear Sir:

A Notice of Appeal from the final rejection of Claims 9-13, all pending claims, of U.S. Patent Application No. 10/657,110 is submitted herewith. Applicant accordingly files its appeal brief in connection with its appeal. A Claims Appendix is submitted herewith, as are Appendices related to evidence previously submitted and decisions related to the case.

Mailing Certificate: I hereby certify that this correspondence is today being deposited with the U.S. Postal Service as *First Class Mail* in an envelope addressed to: Commissioner for Patents and Trademarks; Post Office Box 1450; Alexandria, VA 22313-1450.

June 30, 2006


Corey L. Malachi

(i) Real Party In Interest

The real party in interest is Karl Storz Development Corp., assignee of the patent application.

(ii) Related Appeals and Interferences

There are no related Appeals or Interferences.

(iii) Status Of Claims

Claims 9-13 stand rejected and are the subject of the instant Appeal. A copy of each of these claims is attached hereto in the Claims Appendix. Claims 1-8 have been cancelled.

(iv) Status Of Amendments

There are no pending or unentered Amendments.

(v) Summary Of Claimed Subject Matter

The present invention as claimed in independent Claim 9 relates to a method for improving diagnostic and surgical procedures with a variable direction of view endoscope, which has a variable line of sight. As shown in Figure 3 and described on

Page 9, lines 8-25 (Paragraph 0020) of the specification, the method includes acquiring volumetric scan data of a subsurface structure (50) and positioning the endoscope (10) relative to the subsurface structure (50). As explained therein, and as further explained at Page 4, lines 8-13 (Paragraph 0006), configuration data of the internal view changing mechanism that changes the direction of view (12) is acquired, and the position of the endoscope (10) relative to the subsurface structure (50) is established. As shown in Figure 4A and described on page 9, line 25 – Page 10, line 12 (Paragraphs 0020-21), using the volumetric scan data, the endoscope position data, and the view changing mechanism configuration data, representations of the subsurface structure (50) and the endoscopic line of sight (12) are displayed in their correct relative spatial relationship as graphical representations (68) and (76).

(vi) Issues To Be Reviewed On Appeal

Claims 9-13 stand rejected under 35 U.S.C. §103(a) as unpatentable over Chen et al., U.S. Patent No. 6,241,657, in view of Dohi et al., U.S. Patent Application No. 2002/0022767.

(vii) Argument

Independent Claim 9

As the Examiner has noted, Chen does not anticipate independent claim 9 because all of the elements in this claim are not shown in this reference. Specifically, Chen does not disclose acquiring configuration data of an internal view changing mechanism of the endoscope, which is used along with volumetric scan data and endoscope position data to display representations of the subsurface structure and the endoscopic line of sight in their correct relative spatial relationship. See 04-03-06 Final Office Action, Items [06]-[07].

The Examiner, however, has cited Dohi, stating that Dohi discloses an internal view changing mechanism (internal motors 7, 8 and rotary encoders 9, 10). See *id.*, Item [08]. The Examiner further states that “the changeable position of Dohi’s endoscope *could be* measured with [Chen’s] ‘tracking system 97’... The changeable orientation of Dohi’s endoscope *could be* measured with the ‘[r]otary encoders 9 and 10’ disclosed by Dohi and fed to the ‘tracking system 97’ disclosed by Chen.” See *id.*, Item [09] (emphasis added).

Appellant submits that this rejection of independent claim 9 is improper for each of the following reasons: (1) the fact that a reference “could be” modified to produce the

claimed invention does not amount to a suggestion to do so; (2) there is no basis for the assertion that the Chen device even “could” be modified in this way, and the Chen reference certainly does not teach one skilled in the art how to do so; (3) the references actually teach away from making such a modification; and (4) even if the references are combined, they still do not disclose all the elements recited in independent claim 9.

The Rejection Is Improper Because There Is No Suggestion to Make the Necessary Modification to Arrive at the Claimed Invention

Applicant notes that the Examiner has repeatedly asserted that the changeable internal configuration of the Dohi scope “could be” measured with Chen’s tracking system 97, as quoted above. Applicant submits that the “mere fact that references *can be* combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” MPEP 2143.01 (citing *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990) (fact that prior art “may be *capable* of being modified to run the way the apparatus is claimed, there must be some suggestion or motivation in the reference to do so.”) (emphasis added). In order for the combination to be proper, there must be some independent suggestion in the art, and this suggestion cannot come from the applicant’s disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

Here, there is no suggestion in the prior art to make the combination necessary to arrive at invention recited in claim 9. The Examiner has stated that it would have

been obvious to one in the art that Chen's endoscope accommodate the particulars of an endoscope disclosed by Dohi because Dohi's endoscope allows for "[provision of] various endoscope images in good quality without the movement or bending of an endoscope." See 04-03-06 Final Office Action, Item 10. Applicant notes that this is simply a reason why an internal view changing mechanism is desirable. Applicant respectfully submits that Dohi's stated objective for its own design (i.e., having an internal view changing mechanism) does not provide any suggestion to combine such a mechanism with a tracking system such as Chen's. The Examiner has not pointed to any suggestion in the art that it would be desirable to acquire configuration data about the internal view changing mechanism and use it to display graphical representations of the anatomical structure and the endoscopic line of sight in their correct relative spatial relationship. Neither reference suggests the desirability of acquiring and using configuration data about an internal view changing mechanism in this way.

Applicant respectfully submits that the Examiner has located individual elements appearing in two different references—a tracking system for monitoring the position and orientation of the scope itself, and a scope with an internal view changing mechanism—and has then combined these references in order to make a change not reasonably suggested by those references. Applicant submits that it is not appropriate to try to piece together a claimed invention, using the Applicant's disclosure as a roadmap, in

this fashion. As the Court of Appeals for the Federal Circuit has recently reaffirmed and explained:

[I]n making the assessment of differences between the prior art and the claimed subject matter, section 103 specifically requires consideration of the claimed invention "as a whole." Inventions typically are new combinations of existing principles or features. *Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698 (Fed.Cir.1983) (noting that "virtually all [inventions] are combinations of old elements"). The "as a whole" instruction in title 35 prevents evaluation of the invention part by part. Without this important requirement, an obviousness assessment might successfully break an invention into its component parts, then find a prior art reference corresponding to each component. *This line of reasoning would import hindsight into the obviousness determination by using the invention as a roadmap to find its prior art components. Further, this improper method would discount the value of combining various existing features or principles in a new way to achieve a new result--often the essence of invention.*

Princeton Biochemicals, Inc. v. Beckman Coulter, Inc., 411 F.3d 1332, 1337, 75

U.S.P.Q.2d 1051, 1054 (Fed. Cir. 2005) (citations omitted) (emphasis added). Here, the Chen and Dohi references do not suggest, either alone or in combination, the desirability of acquiring and using configuration data about an internal view changing mechanism as claimed to display graphical representations of the anatomical structure and the endoscopic line of sight in their correct relative spatial relationship.

The Rejection Is Improper Because the References Do Not Even Enable One Skilled In the Art to Make the Necessary Modification to Arrive at the Claimed Invention

Additionally, regardless of the propriety of a rejection based on the notion that the Chen reference “could” be modified, Applicant submits that there is no basis for the assertion that the Chen design even *could* be modified in this way. It is unclear why the tracking system 97 is allegedly able to receive and process signals from rotary encoders in the scope.

In fact, Chen is relatively silent on the nature of the tracking system 97. The little it does say describes tracking systems that are attached to the exterior of the endoscope “such that the output signals generated by the tracking system 97 will be representative of the spatial positioning and orientation of the endoscope 90.” See Col. 5, Ins. 3-20; Fig. 1. Indeed, Applicant respectfully notes that the Examiner himself has expressed his understanding that “the ‘tracking system’ disclosed by Chen determines the *overall orientation* of the endoscope, which necessarily reflects the orientation of the internal configuration of the endoscope” (see 04-03-06 Final Office Action, Items [14]). Regardless, whatever may conceivably be possible as far as tracking systems go, Applicant submits that there is certainly no teaching in the Chen reference of a tracking system that is operative to acquire configuration data of view changing mechanisms of the scope.

The Rejection Is Improper Because the References Teach Away From the Necessary Modification to Arrive at the Claimed Invention

Moreover, regardless of whether one “could” make the cited modification (and whether this is even an appropriate ground for rejection), both references specifically teach away from such a design change. Specifically, each of these references discusses the advantages of their forms of changing the direction of view *without* using the type of motion described in the other reference.

Specifically, the Dohi reference explains that the objective of the Dohi system is to acquire images of particular, focused areas *without moving or bending the scope*. See Dohi, Paragraphs 0008, 0010, 0055.

Similarly, Chen, which employs the tracking system 97 that tracks the position and orientation of the scope itself (i.e., pitch, roll), specifically describes the advantage of being able to consider the scope and field of view software objects 90A, 90B as a single unit when being positioned within the 3-D computer models by maintaining a fixed relationship between the two. Specifically, Chen explains:

It is important to recognize that, so long as the optical characteristics of endoscope 90 remain constant, the size and positional relationships between shaft software object 90A' and disk software object 90B' will also remain constant. As a result, it can sometimes be convenient to think of shaft software object 90A' and disk software object 90B' as behaving like a single unit, e.g., when positioning the software objects 90A' and 90B' within 3-D computer models.

Col.8, Ins. 14-22. Accordingly, Chen actually suggests that it is undesirable to employ an internal view changing mechanism that would change the direction of view relative to the position of the scope itself. Therefore, because these references actually discuss the disadvantages of using these different types of view changing motion together in the same scope, Applicant submits that they teach away from simultaneously acquiring data related to these different types of motion in order to display the aforementioned graphical representations.

The Rejection Is Improper Because A Combination of the References Still Does Not Disclose All of the Elements of the Claimed Invention

Finally, even the above-described combination were made, one would still not arrive at the invention of claim 9, as this combination would still not disclose all the elements of claim 9. As alluded to above, even if an internal view changing mechanism were incorporated into the Chen device, there is still no disclosure of “acquiring configuration data” of such a view changing mechanism, and displaying representations of the subsurface structure and the endoscopic line of sight in their correct relative spatial relationship based on this configuration data, as Chen only discloses a tracking system “adapted to monitor the position and orientation of an object in space and to generate output signals... representative of the spatial positioning and orientation of [the] endoscope.” See Col.5, Ins. 4-17. Even if a view changing mechanism were

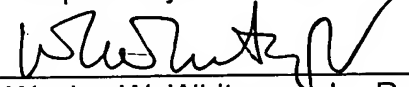
incorporated into the Chen design (which Applicant submits is improper for the reasons stated above), there would still be no suggestion to acquire configuration data of that mechanism with the tracking system 97 and use it (along with the other data) for the proper display of the subsurface structure and the endoscopic line of sight. The only basis for making this modification is that it arguably *could be* done, which, as explained above, is simply impermissible hindsight.

Conclusion

For all of the foregoing reasons, it is submitted that the claimed invention is patentable over the cited art. Accordingly, it is submitted that the rejection of claims 9-13 should be reversed, and it is respectfully requested that the Examiner be directed to issue a Notice of Allowance allowing these claims.

June 30, 2006

Respectfully submitted,



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**Claims Appendix
to Appeal Brief Under 37 CFR §41.37
Serial No. 10/657,110**

9. A method for improving a diagnostic or surgical procedure involving a variable direction of view endoscope with a variable line of sight comprising:

acquiring volumetric scan data of a subsurface structure;

positioning said endoscope relative to said subsurface structure;

acquiring configuration data of an internal view changing mechanism of the said endoscope;

establishing the position of said endoscope relative to said subsurface structure;

and

based on said volumetric scan data, said endoscope position data, and said configuration data, displaying representations of said subsurface structure and said endoscopic line of sight in their correct relative spatial relationship.

10. The method of claim 9, further comprising displaying a representation of the rotational orientation of the endoscopic view.

11. The method of claim 9, wherein said establishing endoscope position relative to said subsurface structure comprises:

correlating at least one endoscopic view with the corresponding region of said volumetric scan data by feature matching and identification; and

computing the relative position of said endoscope and said subsurface structure using said configuration data for each said endoscopic view and the location of each said corresponding region obtained through said feature matching, and identification.

12. The method of claim 9, further comprising:

selecting a target point relative to said volumetric scan data; and

instructing said endoscope to direct its line of sight towards said target point.

13. The method of claim 9, further comprising:

selecting a path relative to said volumetric scan data; and

instructing said endoscope to direct its line of sight to follow said path.

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Response to Official Action

**Evidence Appendix
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No evidence of any kind, including evidence submitted under 37 CFR 1.130, 1.131 or 1.132, has been entered by the Examiner and relied upon by Appellant in the appeal.

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Response to Official Action

**Decisions Appendix
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There are no related Appeals or Interferences. As such, there are no decisions rendered by a court or the Board in any such Appeals or Interferences.